British West Indies Central Sugar Cane Breeding Station, Barbados.

IMPERIAL MYCOLOGICAL
8 JUNE 1944
INSTITUTE

NINTH ANNUAL REPORT

Ending September 30, 1942.

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1. FOREWORD.

Advisory Committee

The tenth meeting of the Advisory Committee was held in Barbados on September 9th and 10th, 1941; that is to say, towards the end of the eighth year of the Station's activities. Accordingly, and in view of the difficulties experienced in obtaining meetings during war time, it was deemed expedient to delay a meeting of the Advisory Committee until the tenth year.

While there was no actual meeting of the Advisory Committee during the year under review, the Station, by correspondence, continued to interchange information with the authorities in the contributing Colonies.

Technical

Perhaps the most outstanding feature under this head is the performance of the seedling B.37161 in Barbados. A special section in this Report is devoted to this from which it is clear that the replacing of the standard varieties by this new seedling will result in a marked increase in the output of sugar per acre. The newer seedling B.34104 is showing marked promise in Barbados and in the contributing Colonies.

Of the more recent seedlings, the following are considered of particular promise—B.38155 and B.4098. These seedlings are nobilisations and indicate the wisdom of the policy of developing nobilisation work in preference to breeding with purely noble cane material.

In the furtherance of this principle, additional breeding material has been imported from the United States Department of Agriculture through the Plant Quarantine Station, Trinidad. This newer material comprises chiefly first nobilisation of the species *Saccharum robustum*. The results of the nobilisation of this material will be awaited with interest.

During the year under review, twenty-one seedlings were sent to the Central Plant Quarantine Station in Trinidad for distribution to the contributing Colonies.

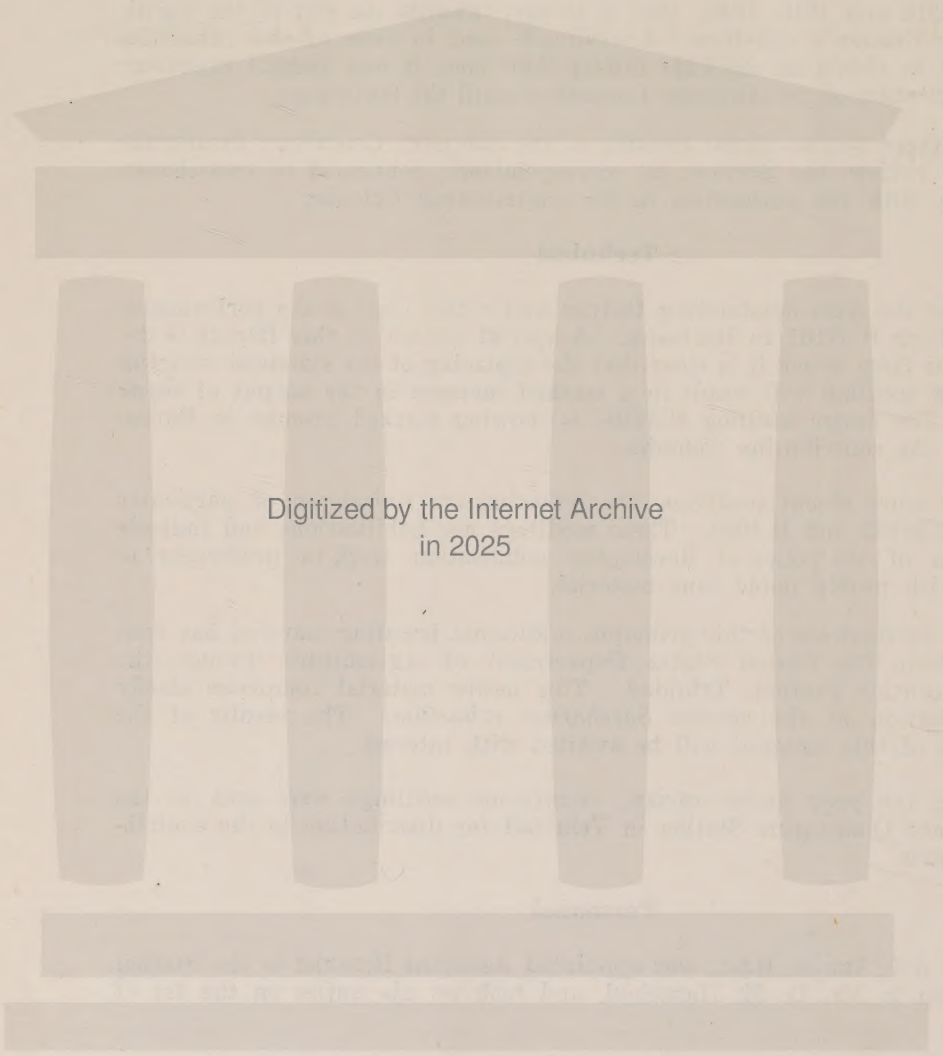
Personnel

Mr. B. deL. Inniss, B.Sc., was appointed Assistant Botanist to the Station in succession to Mr. D. M. Hanschell, and took up his duties on the 1st of May, 1942.

S. J. SAINT,

Director of Agriculture,
Barbados,

Chairman of Advisory Committee



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British West Indies Central Sugar Cane Breeding Station, Barbados.

NINTH ANNUAL REPORT FOR THE YEAR ENDING THE 30TH OF SEPTEMBER, 1942.

II. SUGAR CANE BREEDING—SEEDLING SELECTION AND TRIALS.

(i) SUGAR CANE BREEDING—B.44′ SERIES.

Sugar cane breeding was carried out at Lion Castle from October to December, 1941.

All breeding work consisted in crossing and the usual lantern method was employed. The season did not favour heavy arrowing, and difficulty was experienced in obtaining fertile crosses.

(ii) SEEDLING RAISING, POTTING AND PLANTING IN FIELD NURSERY—B.44′ SERIES.

The usual sowing and potting methods were used.

Sowing was done from December to January and potting was completed by February. Potted seedlings were planted in the field nursery in early May.

Table I. shows under group heads the numbers of seedlings germinated, potted and planted in the field nursery, while Appendix I gives details for all crosses made.

TABLE I.

Numbers of Seedlings in each Group Germinated, Potted and Planted in the Field Nursery—B.44′ Series.

Group	No. of crosses	No. germinated	No. potted	No. planted in field nursery
S. officinarum	5	1,324	864	773
S. officinarum x *S. spontaneum*				
glagah nobilisation	7	959	882	796
local nobilisation	3	136	97	89
tabongo nobilisation	1	135	102	95

TABLE I—*(Continued)*

Numbers of Seedlings in each Group Germinated, Potted and Planted in the Field Nursery—B.44′ Series.

GROUP	No. of crosses	No. germinated	No. potted	No. planted in field nursery
S. officinarum x *S. robustum*				
1st nobilisation	1	4,183	4,183	3,387
2nd nobilisation	2	189	187	179
S. officinarum x *S. barberi chunnee* nobilisation	2	405	390	381
S. spontaneum x *S. sinense glagah* nobilisation x *sinense* nobilisation	5	317	290	264
S. spontaneum x *S. barberi glagah* nobilisation x *chunnee* nobilisation	21	5,277	5,078	4,849
local nobilisation x *chunnee* nobilisation	2	45	45	44
S. barberi x *S. sinense chunnee* nobilisation x *sinense* nobilisation	4	160	134	126
S. barberi x *barberi chunnee* nobilisation x *chunnee* nobilisation	1	21	17	17
S. barberi x *S. sinense* x *S. spontaneum chunnee* nobilisation x *glagah* nobilisation x *sinense* nobilisation	3	160	140	139
Co. 281 and its derivatives				
Co. 281 x *glagah*	10	3,302	3,035	2,841
Co. 281 x *chunnee* nobilisations	4	379	288	286
Co. 281 x *S. officinarum*	1	56	49	44
Co. 281 x *S. sinense* nobilisation	1	57	51	50
Co. 290 and its derivatives				
Co. 290 x *glagah* nobilisations	3	104	82	80
Co. 290 x *S. officinarum*	1	673	657	640
Co. 290 x *chunnee* nobilisation	1	24	24	20
Co.290 x *sinense* nobilisation	1	3	0	0
Co.290 x *sinense* nobilisation .... x *glagah* nobilisation	1	1,189	1,176	1,134
Totals	80	19,098	17,771	16,234

It may be noted that in accordance with the gradual change in breeding policy mentioned in previous reports, there were only five purely noble crosses out of a total of eighty crosses made during the season and these included the newer noble-cane seedling—B.3439—as mother parent.

Attention is drawn to the continued extensive use as parents of the noble cane B.3439, the *glagah* nobilisations B.3353 and B.3354, and the chunnee nobilisation B.3365. In addition the variety Co.290, and the Co.281 derivative B.34104 have been used extensively; the first named having already proved a good parent, the second giving promise of being such.

The Java form of *S. spontaneum*—kloet—and the Celebes form—*tabongo* —were used for the first time as was also the new commercial seedling—B.37161.

Also for the first time, crosses were carried out involving the use as parents of *Saccharum robustum* and nobilised derivatives.

As in previous seasons, so here again crosses involving parents with blood of *S. sinense* have proved comparatively infertile.

(iii) PLANTING THE FIRST YEAR SEEDLING TRIAL—B.43′ SERIES.

This series was bred in 1940, planted in the field nursery in May, 1941, and selections from the field nursery planted in the First Year Seedling Trial in October, 1941. This trial will be reaped in 1943. Details for each of the crosses are given in Appendix II. A summary of this Appendix is presented in Table II below.

TABLE II.

Numbers of crosses and seedlings in each Group planted in the First Year Seedling Trial, October, 1941—B.43′ SERIES.

Group	No. of crosses	No. of seedlings planted in trial
S. spontaneum x *S. officinarum*		
glagah—5th nobilisation	1	37
dacca—2nd nobilisation	1	27
S. spontaneum x *S. spontaneum*		
glagah nobilisation x *glagah* nobilisations	3	479
,, ,, x *local* ,, ...	5	174
,, ,, x *celebes* (*toledo* derivatives)	5	1,510
,, ,, x *celebes* x local nobilisations	4	592
S. spontaneum x *S. barberi*		
glagah nobilisations x *chunnee* nobilisations	11	1,588
celebes nobilisations x *chunnee* nobilisations	3	433
chunnee nobilisation x *local* nobilisation	1	32
S. spontaneum x *sinense*		
glagah nobilisations x *S. sinense* nobilisations	5	154
celebes nobilisation x *S. sinense* nobilisation	1	253
S. barberi x *S. officinarum*		
chunnee—4th nobilisation	1	113
S. barberi x *S. spontaneum* x *sinense*		
chunnee x *glagah* x *S. sinense*	2	123

TABLE II—(*Concluded*)

GROUP	No. of crosses	No. of seedlings planted in trial
Co. 281 and its derivatives		
Co. 281 x *glagah* nobilisations	4	712
„ „ x *S. officinarum*	1	98
„ „ x *glagah* nobilisation x *S. sinense* nobilisation	1	200
„ „ x *celebes* nobilisations	2	1,190
„ „ x *chunnee* nobilisation	1	1,240
„ „ x *glagah* nobilisation x *chunee* nobilisation	1	150
Co. 290 and its derivatives		
Co. 290 x *S. officinarum*	2	97
„ „ x *glagah* nobilisations	5	823
Totals	60	10,025

In planting this Trial, each cross represented by 40 or more seedlings was divided into five groups, a group of any cross being planted at random in each of five blocks. It may be noted that of the seedlings planted in this Trial. there were no seedlings of a purly noble cross.

(iv) RESULTS OF REAPING FIRST YEAR SEEDLING TRIALS—B.42' SERIES

These were bred in 1939, planted in the field nursery in April, 1940 and from this into the First Year Seedling Trial in October, 1940.

There was no distinction made this year between proven and experimental crosses. For the sake of convenience the seedlings were cut at two separate times.

The seedlings were cut, bundled, and laid out for inspection and field selections were made. The following data were obtained from each field selection :—(i), weight, (ii), number of sound canes, (iii), number of rotten canes, (iv), per cent arrowing, and (v), juice brix value as shown by the Zeiss Hand Refractometer.

Table III gives details of field and final selections.

TABLE III.

First Year Seedlings—B.42' Series. Field and Final Selections.

Cross	No. Seedlings Reaped	No. Selected in Field	% Field Selection	No. Finally Selected	% Final Selection
S. officinarum					
B.3013 x B.2935	225	4	2	—	—
B.3521 x B.2935	212	—	—	—	—
S. spontaneum					
(a) *celebes*—3rd nobilisation					
B.35197 x B.2935	92	6	7	1	1
B.35204 x B.2935	508	17	3	9	2
B.35204 x B.603	398	4	1	1	25
B.35247 x B.2935 ...	19	1	5	—	—
(b) *glagah*—3rd nobilisation					
B.38272 x B.H.10(12) ...	100	7	7	2	2
B.38274 x B.H.10(12)	6	1	16	1	16
glagah—4th nobilisation					
B.3013 x P.O.J. 2878	432	27	6	17	4
B.3439 x P.O.J. 2878	1,402	102	7	53	4
B.(30) L.6 x B.H.10(12)	150	4	3	1	1
B.(30) L.6 x B.2935	150	5	3	2	1
B.3354 x B.H.10(12)	57	14	25	6	11
B.3354 x B.2935	18	3	16	1	6
B.3353 x B.417	18	2	11	2	11
B.3353 x B.3899	46	1	2	1	2
B.3353 x B.2935	107	12	11	5	5
B.3353 x B.H.10(12)	255	25	10	11	4
glagah—5th nobilistaion					
B.34102 x B.2935	593	62	10	29	5
B.34102 x Ba.6032	167	2	1	1	1
S. barberi—3rd nobilisation					
B.3013 x B.35245	151	6	4	5	3
4th nobilisation					
B.37161 x B.3899	30	4	13	2	7
B.37161 x B.2935 ...	10	1	10	1	10
S. spontaneum x *S. spontaneum* *glagah* nobilisation x *local* nobilisation					
B.3172 x B.37254	20	1	5	1	5
Ba.11569 x B.38283	20	—	—	—	—
B.3013 x B.38279 ...	80	4	5	2	3
B.34102 x B.38285	189	6	3	—	—
B.3013 x B.38280 ...	200	14	7	2	1

TABLE III.—*Continued.*

Cross	No. Seedlings Reaped	No. Selected in Field	% Field Selection	No. Finally Selected	% Final Selection
S. spontaneum x *S. sinense*					
glagah nobilisation x *sinense* nobilisation					
B.3353 x B.37261	87	1	1	—	—
B.35271 x P.O.J. 2878 ..	40	1	3	1	3
B.3172 x B.35269 ...	14	—	—	—	—
S. spontaneum x *S. barberi* *glagah* x *chunnee* nobilisations					
Co. 213 x P.O.J. 2878 ...	82	11	**13**	3	4
Co. 281 and its derivatives x *glagah* nobilisations					
P.O.J. 2725 x B.34116 ...	448	7	2	2	1
M.D.47 x Co.281	294	22	8	6	2
Co. 290 and its derivatives					
Co. 290 x *S. officinarum*					
B.3439 x Co.290	492	99	20	50	10
Co.290 x *chunnee* nobilisations					
B.3365 x Co.290	1,069	84	8	39	4
Co.290 x *celebes* nobilisations					
B.35197 x Co. 290	674	51	8	21	3
Co.290 x *glagah* nobilisations					
B.35218 x P.O.J.2878	300	47	16	26	9
Miscellaneous					
P.O.J.2725 x B.35245	433	5	1	2	1
B.3365 x P.O.J.2878	166	26	16	11	7
B.3354 x C.P.28/11	499	51	10	16	3
B.3353 x C.P.28/19	75	5	7	2	3
B.37161 x B.37261	54	9	17	3	6
B.3365 x B.35269	5	—	—	—	—
B.35197 x B.35245	25	1	4	—	—
	10,412	755	7	338	3

These percentage selection figures for the various crosses tested are used in conjunction with the detailed data mentioned above in assessing the value of crosses and in guiding the breeding work. The following varieties were outstanding as parents:—B.3353, B.3354, B.3365, B.3439, B.35204, B.35218, P.O.J.2878 and Co.290.

(v) PROGRESS WITH SEEDLINGS OF THE B.41' SERIES

The following seedlings were selected from the First Year Trial reaped in 1941:—

Noble Canes	....	....	....	69
Nobilisations	....	....	....	130
				199

These were multiplied at Codrington Experiment Station during 1941, and in October, 125 seedlings, of which 41 were purely noble canes, were selected. These selections were allocated as follows:—

(a) Central Sugar Cane Breeding Station Second Year Trials at Cliff and Todds (high rainfall stations) and at Codrington and Dodds (low rainfall stations). The standards at Dodds and Codrington were B.37161 and B.3439 and at Cliff and Todds—B.35187 and B.35245:—

62 seedlings to Dodds and Todds
62 seedlings to Codrington and Cliff

(b) to Lion Castle for breeding purposes—4 seedlings.

These trials will be reaped during 1943 crop.

(vi) PROGRESS WITH SEEDLINGS OF THE B.40' SERIES

(a) *Noble Cane Seedlings.* These were selected in 1940, multiplied at Codrington, and in November planted at Dodds for further multiplication, gumming disease resistance tests and minor selection.

Out of an original total of sixty-eight seedlings, forty-one were eliminated on account of poor appearance in the field or susceptibility to gumming disease. The remaining twenty-seven seedlings were incorporated and planted with the selections of the B.41' series in the Central Sugar Cane Breeding Station Second Year Trials for the season 1941-43 (q.v. Section V above).

(b) *Nobilisations.* The selections from the multiplication plots in October, 1940 were planted in the Central Sugar Cane Breeding Station Second Year Trials. These trials were reaped in 1942. The trials were divided into a "thick" and "thin-cane" trial and were planted at the low rainfall station,—Codrington, and a high rainfall station,—Cliff. The standards in the "thick-cane" trials were—Codrington—B.2935 and Cliff—B.H.10(12). In the "thin-cane" trials the standards were, B.37161 and B.34104 at Codrington and B.34104 and B.H.10(12) at Cliff. Performances of the standards and selected seedlings are presented in Tables IV, V, VI and VII.

TABLE IV.

Central Sugar Cane Breeding Station Second Year "Thick-Cane" Trials B.40' Series (Nobilisations) 1940-42.

Performances of Standards and Selected Seedlings.

(The figures given are the means of four Plots)

(a) Low Rainfall Station, Codrington. Reaped 29th—30th January, 1942. (63 Seedlings Tested)

Seedling	Parentage	Mean No. Canes per Plot (rotten)	% Arrowing	Z.H.R. Brix	Mean Yield Tons per Acre
B.4098	B.3439 x Co.290	165(5)	2	21.0	52.16
B.4096	,, ,, ...	156(9)	1	21.0	40.95
B.2935* ...	**Standard ....**	**91(5)**	**0**	**19.7**	**40.66**
B.40117	B.3439 x Co.290 ...	116(2)	39	20.8	37.24
B.4091	,, ,, ...	123(3)	4	19.9	34.39
B.40133 ...	B.3013 x B.3337	134(4)	3	20.0	32.11
B.40130	B.3013 x B.35176...	115(1)	12	17.9	30.50
B.40174	B.3371 x B.2935	104(4)	0	19.9	28.69
B.40152	B.34137 x B.2935 ...	104(12)	0	18.9	26.70
B.40115	B.3439 x Co.290	93(1)	0	21.9	26.51
B.40126	B.3013 x B.34161....	121(14)	0	22.2	26.51
B.40164	B.3274 x B.H.10(12)	89(3)	2	20.7	24.42
B.4029	B.3172 x B.2935	79(8)	0	19.8	20.43
B.40108	B.3439 x Co.290	105(40)	3	18.5	19.57

* Standard varieties in heavy type.

TABLE V.

(b) High Rainfall Station—Cliff. Reaped 17th—20th March, 1942. (63 Seedlings Tested)

Seedling	Parentage	Mean No. Canes per plot (rotten)	% Arrowing	Z.H.R. Brix	Mean Yield Tons per Acre
B.4098	B.3439 x Co.290	144(6)	6	23.3	42.31
B.4096	,, x ,, ...	141(10)	8	22.6	41.11
B.40117	,, x ,, ...	123(8)	36	22.8	39.73
B.40115	,, x ,, ...	122(10)	2	23.2	37.41
B.40152	B.34137 x B.2935	126(14)	1	21.1	37.32
B.4091	B.3439 x Co.290	126(7)	25	23.2	36.12
B.40164	B.3274 x B.H.10(12)	98(2)	1	23.4	34.14
B.40108	B.3439 x Co.290	150(19)	9	22.8	34.07
B.40130	B.3013 x B.35176	121(6)	13	22.8	33.88
B.40174	B.3371 x B.2935	113(3)	0	22.4	33.54
B.40126	B.3013 x B.34161	117(5)	1	23.8	32.34
B.H.10(12)*	**Standard ....**	**99(2)**	**0**	**23.4**	**31.73**
B.40133	B.3013 x B.3337	101(5)	1	23.0	30.96
B.4029	B.3172 x B.2935	88(5)	0	23.5	30.44

* Standard varieties in heavy type.

TABLE VI.

Central Sugar Cane Breeding Station Second Year "Thin-Cane" Trials B.40' Series (Nobilisations) 1940-42.

Performances of Standards and Selected Seedlings.

(The figures given are the means of four Plots)

(a) Low Rainfall Station, Codrington. Reaped 27th January, 1942. (18 Seedlings Tested)

Seedling	Parentage	Mean No. Canes per plot (rotten)	% Arrowing	Z.H.R. Brix	Mean Yield Tons per Acre
B.40100	B.3439 x Co.290	169(2)	1	19.0	48.93
B.40102	„ x „	150(3)	9	19.8	46.08
B.40105	„ x „	163(1)	5	20.6	42.28
B.4097	„ x „	144(2)	40	20.7	41.42
B.4099	„ x „	200(5)	2	21.3	40.09
B.40116	„ x „	146(4)	0	20.1	37.62
B.40112	„ x „	136(3)	14	20.7	37.15
B.37161	**Standard**	**96(3)**	**0**	**20.1**	**36.58**
B.40114	B.3439 x Co.290	147(1)	1	21.7	34.30
B.34104	**Standard**	**144(4)**	**1**	**21.0**	**33.91**

TABLE VII.

(b) *High Rainfall Station—Cliff. Reaped 17th March, 1942. (18 Seedlings Tested).*

Seedling	Parentage	Mean No. Canes per plot (rotten)	% Arrowing	Z.H.R. Brix	Mean Yield Tons per acre
B.40105	B.3439 x Co.290	168(5)	8	22.9	37.67
B.40102	„ x „	139(6)	14	20.9	37.50
B.40112	„ x „	172(12)	31	24.1	35.95
B.40116	„ x „	138(5)	1	22.4	34.74
B.4097	„ x „	139(10)	37	23.4	34.14
B.40100	„ x „	157(9)	6	21.3	33.20
B.40114	„ x „	169(6)	12	24.2	31.22
B.34104	**Standard**	**147(4)**	**2**	**23.9**	**30.96**
B.4099	B.3439 x Co.290	159(10)	0	22.4	29.07
B.H.10(12)	**Standard**	**79(2)**	**0**	**22.9**	**21.33**

Standard varieties in heavy type.

(vii) SECOND YEAR SEEDLING TRIALS—B.39′ SERIES.

A total of sixty-one seedlings of the B.39′ series were included in Second Year Trials. All of these seedlings were placed at the low rainfall station—Dodds and the high rainfall station—Todds. The trial at Dodds was reaped at two different periods, early and late. The performances of the selections and standards are given in Table VIII.

TABLE VIII.

Second Year Seedlings—B.39′ Series.

Seedling	Dodds Early Reaping 17-20/2/42		Dodds Late Reaping 30-31/3/42		Todds 26/2/42	
	Weight Tons/Acre Mean of 4 plots	Z.H.R. Brix Mean of 4 plots	Weight Tons/Acre Mean of 4 plots	Z.H.R. Brix Mean of 4 plots	Weight Tons/Acre Mean of 4 plots	Z.H.R. Brix Mean of 4 plots
B.2935	**25.73**	**20.9**	**16.01**	**21.0**	....	....
B.37161	**48.60**	**21.0**	**54.34**	**22.0**	....	....
B.H.10(12)	....	....	....	....	**35.67**	**21.6**
B.35245	....	....	....	....	**45.10**	**22.4**
B.3915	39.20	20.7	42.77	21.3	48.60	20.9
B.39175	30.65	21.4	34.54	22.3	39.37	21 1
B.39180	38.94	21.4	44.13	25 3	46.07	22.8

.. * Standard varieties in heavy type.

The seedlings B.3915, B.39175 and B.39180 are being multiplied and will be further tested in Barbados in Select Seedling Trials.

(viii) SELECT SEEDLING AND CO-OPERATIVE VARIETY TRIALS B.40′, B.38′, B.37′, B.35′, B.34′, B.31′ AND B.30′ SERIES

A. THE SEEDLINGS TESTED

(1) *Select Seedling Trials*

Plant Canes .... B.3013, B.3127, B.3419, B.3439, B.34104, B.34110, B.35187, B.35245, B.3703, B.3708, B.3734, B.3737, B.3739, B.3771, B.3774, B.3775, B.3777, B.3791, B.37107, B.37111, B.37161, B.3899, B.38154, B.38155, B.38178, B.38209, B.38212, B.38230, B.38232, B.38233.

1st Ratoons .... B.3013, B.3127, B.37161.

3rd Ratoons .... B.35187, B.35245.

(2) *Variety Trials.*

1st Ratoons .... B.3127, B.35187, B.35245.

2nd Ratoons .... B.3127, B.3419, B.3439.

The prevailing recommended commercial varieties in the area of each station were included in the trials as standards for comparison.

B. AN ECOLOGICAL CLASSIFICATION OF THE TRIALS.

The classification is similar to that used in recent years and is as follows:—

(a) Black coral limestone soils where the average annual rainfall is low. On account of low rainfall, ratooning is difficult and cane tonnages usually low. Stations in this category were:—

(1) *Select Seedling Trials.*

Plant Canes	....	....	Sandford, Spencers (Maturity Trial)
1st Ratoons	....	....	Prior Park, Norwood (Maturity Trial).

(2) *Variety Trials.*

1st Ratoons	....	....	Springhall, River.

(b) Black coral limestone soils of low-intermediate rainfall. On account of a better rainfall than Category (a), a certain amount of ratooning is practised. The extent of ratooning would increase, were stronger ratooning varieties available. The stations in this category were:—

(1) *Select Seedling Trials.*

Plant Canes	....	....	Yorkshire, Friendship.
1st Ratoons	....	....	Bourbon, Edgecumbe.

(2) *Variety Trials.*

1st Ratoons	....	....	Newton, Bennetts.
2nd Ratoons	....	....	Lears, Lower Greys.

(c) Valley deep black coral limestone soil area, low-intermediate rainfall. This area may suffer periodic water-logging. Soils, especially sub-soils, tend to a heavy texture, and root diseases are commonest here. Varieties resistant to the root disease complex are necessary here. A considerable percentage of this area is ratooned. Stations in this category were:—

(1) *Select Seedling Trials.*

Plant Canes	....	....	Bulkeley, Carrington.
1st Ratoons	....	....	Bulkeley.

(2) *Variety Trials.*

1st Ratoons	....	....	Constant.

(d) Red coral limestone area, intermediate to high rainfall. One to four ratoon crops are grown here. Stations in this category were:—

(1) *Select Seedling Trials.*

Plant Canes	....	....	Guinea, Andrews, Westmoreland, Society, (Maturity Trial).
1st Ratoons	....	....	Welchtown, Easy Hall, Claybury, Pool, (Maturity Trial).
3rd Ratoons	....	....	Mount Wilton.

(2) *Variety Trials.*

1st Ratoons	....	....	Ashbury, Clifton Hall, Horse Hill, Lancaster, Farmers, Mount Wilton.

(e) Sandy coral limestone area, low-intermediate rainfall. This is a comparatively restricted area in the north-west. The rainfall is low to intermediate; the soils are comparatively light, drain and dry out rapidly. Presumably on account of good aeration, root diseases are less in evidence than in the other ecological areas. Stations in this category were:—

(1) *Select Seedling Trials.*
Plant Canes .... Six Mens.

C. RAINFALL DURING THE SEASON.

The average Island monthly rainfall for the season of crop growth under review is compared in the Table below with the monthly averages for the seasons 1938-39, 1939-40, 1940-41 and the period 1920-21 to 1937-38.

TABLE IX.

Month and Rainfall in Inches.

Month	Seasons				
	1941-42	1940-41	1939-40	1938-39	1920-21 to 1937-38
January	1.42	2.32	2.34	3.26	3.38
February	0.45	0.44	3.34	2.49	1.86
March	1.46	5.46	1.28	2.02	1.57
April	1.55	0.56	0.87	1.19	1.67
May	1.91	1.11	0.79	3.46	1.91
June	3.02	2.54	3.03	4.37	4.48
July	4.72	5.50	3.97	6.79	6.40
August	5.11	6.50	4.63	8.81	6.19
September	10.08	6.17	3.79	10.58	7.22
October	8.15	6.07	8.25	10.42	7.37
November	7.61	7.18	9.02	28.09	8.55
December	3.40	1.89	2.53	6.89	4.03
January	2.11	1.42	2.32	2.34	3.38
February	1.69	0.45	0.44	3.34	1.86
March	1.04	1.46	5.46	1.28	1.57
Totals	53.72	49.07	52.06	95.33	61.44

The rainfall for the season 1941-42 was slightly more than for the 1940-41 season, but was still appreciably below the average for the eighteen year period 1920-21 to 1937-38. The dry spell which started in December, 1940, persisted until June, after which the rainfall was more nearly normal up to the end of November. December and January, however, were below average. The canes ripened well, and juices and purities were good, but tonnages were fair only.

D. Results of the Trials.

In Select Seedling Plant Cane Trials, the following data is obtained:—(1) cane tonnage, (2) number of rotten canes, (3) complete cane chemical analyses from plot sample bundles and so(4), a calculation of the saccharose yields per acre.

In Select Seedling Ratoon Trials, and Maturity Trials, cane tonnages, number of rotten canes and brix hand refractometer figures are obtained.

In Variety Trials cane tonnages and hand refractometer brix values are obtained.

The results from the several categories are considered here. The standard varieties are shown throughout in heavy type.

CATEGORY A.

Results here are given in Tables X, XI, XII and XIII.

TABLE X

Select Seedling Trials—Plant Canes
Estates—Sandford and Spencers. (Maturity Trial)
Figures represent the means of all plots for each estate
Sandford.

Variety	Cane Tons/acre	% Sucrose in cane	Quotient of purity	Sugar Tons/acre	No. Rotten Canes/ plot
Group I. Harvested 17th and 18th February, 1942.					
B.2935	**38.16**	**13.7**	**83.7**	**5.23**	**16**
B.3439	39.06	13.9	81.6	5.45	9
B.3708	32.01	13.5	84.9	4.32	5
B.3734	35.63	13.3	82.9	4.98	7
B.3771	32.94	14.9	86.7	4.92	6
B.3775	33.96	14.5	87.3	4.93	19
B.3777	34.09	13.9	84.7	4.73	22
B.38233	30.19	12.8	83.8	3.85	37
Group II. Harvested 19th and 20th February, 1942.					
B.2935	**36.40**	**14.3**	**84.5**	**5.21**	**35**
B.3439	38.90	13.7	81.5	5.34	8
B.34104	34.84	14.4	87.0	5.03	31
B.38154	38.99	13.0	82.9	5.06	21
B.38178	26.86	14.7	86.4	3.95	20
B.38212	33.83	13.7	82.6	4.65	4
B.38232	41.46	14.3	81.9	5.94	22
B.4094	35.72	14.0	84.1	5.01	13

Standard varieties in heavy type.

The following difference may be regarded as significant:—

	Cane Tons/acre	Sugar Tons/acre
Group I	3.705	0.705
Group II	2.282	0.329

TABLE XI.

Spencers—Plant Cane Maturity Trials.

Early Reaping—12.2.42. Late Reaping—26.3.42

Variety	Cane Tons/acre		Z.H.R. Brix		No. Rotton Canes/Plot	
	Early Reaping	Late Reaping	Early Reaping	Late Reaping	Early Reaping	Late Reaping
B.2935	**33.68**	**29.76**	**20.5**	**21.9**	**8**	**21**
B.34104	32.56	34.08	23.3	25.1	3	17
B.37161	40.04	40.32	21.6	23.0	2	5
B.4094	39.20	38.92	22.3	22.1	5	10
B.40118	41.40	44.28	19.8	20.7	1	3
B.3703	30.72	23.64	18.8	20.8	7	33
B.3734	29.24	25.64	19.7	20.8	3	18
B.3737	32.12	22.72	19.3	22.0	15	43
B.3739	27.52	19.84	21.7	23.2	6	38
B.3771	29.56	31.00	23.1	24.3	3	5
B.3774	29.44	26.84	22.3	22.8	8	17
B.3775	29.84	25.64	21.2	22.8	9	56
B.3777	29.24	28.64	20.9	22.7	8	4
B.3791	32.56	28.12	20.6	21.2	7	26
B.37107	26.36	28.80	22.2	23.4	6	7
B.37111	27.84	26.44	22.2	22.1	5	13
B.3899	33.28	17.12	18.6	19.9	11	48
B.38154	32.92	27.52	19.9	20.8	7	29
B.38155	32.80	28.00	23.3	24.0	2	24
B.38178	22.48	15.08	23.0	24.6	12	64
B.38209	36.08	33.48	22.3	23.1	5	16
B.38212	32.28	27.24	22.2	23.4	3	24
B.38230	29.92	25.36	22.6	23.6	5	27
B.38232	39.00	36.72	20.5	23.0	9	32
B.38233	33.12	30.88	20.9	22.0	11	7

Standard varieties in heavy type.

TABLE XII.

Select Seedling Trials—1st Ratoons.

Estates—Prior Park and Norwood.

Reaping Dates:—Prior Park Late Group—30th Jany., 1942
Early „ —30th „

Norwood: 25th Feby., 1942

Variety	Cane Tons/acre				Z.H.R. Brix				No. Rotten Canes/Plot			
	Prior Park		Norwood		Prior Park		Norwood		Prior Park		Norwood	
	Early Group	Late Group	Early Group	Late Group	Early Group	Late Group	Early Group	Late Group	Early Group	Late Group	Early Group	Late Group
B.726	....	....	**16.64**	**17.10**	....	....	**23.8**	**24.4**	....	....	....	....
B.2935	**17.14**	**13.82**	**23.01**	**21.9**	**20.9**	**21.2**	**21.5**	**21.7**	**3**	**4**	**4**	**4**
B.37161	18.81	14.70	26.20	25.41	21.9	22.6	23.0	23.1	7	4	4	4
B.37175	....	....	24.64	18.07	....	....	23 9	23.1	....	....	8	5

Results at Prior Park showed no significant differences. A difference of 1.75 tons/acre at Norwood may be regarded as significant.

TABLE XIII.

Variety Trials—1st Ratoons

Estates—Springhall and River.

Reaped—Springhall 26.1.42. River 6.2.42

Variety	Cane Tons/acre		Z.H.R. Brix	
	Springhall	River	Springhall	River
B.2935	**31.30**	**24.68**	**19.2**	**18.6**
B.35245	21.48	22.46	20.9	20.4

Standard varieties in heavy type.
Differences are insignificant.

COMMENTS ON RESULTS OF TRIALS IN CATEGORY A.

In the Select Seedling Trial—Plant Canes at Sandford, the standards B.2935 and B.3439 gave better yields than any of the other varieties in Group I. In Group II, B.38232 gave significantly better yields of cane and sugar than any of the other varieties. B. 38154 and B. 4094 were about as good in sugar yields as the standard varieties B.2935, B. 3439 and B.34104 None of the seedlings, however, could be said to show much promise.

In the Maturity Trial at Spencers, the seedlings B.4094, B.40118, B.38209 and B.38232 were outstanding among the seedlings tested. B.40118 gave the highest tonnage, although the brix was rather low. Here again, none of these seedlings are considered likely to become commercial varieties.

In the Select Seedling 1st Ratoon Trial at Prior Park, severe washing of part of the field resulted in many blank stools, thus rendering the results valueless. At Norwood, indications were that B.37161 was better than B.2935 and B.726.

In the Variety First Ratoon Trials at Springhall and River, the standard variety B.2935 gave a better tonnage although lower brixes than the seedling tested namely—B.35245. It is considered that B.35245 is not up to commercial standard in this Category. In this Category the existing commercial varieties—B.2935 and B.726 will undoubtedly be replaced by the seedlings—B.37161, B.3439 and to a lesser extent—B.34104 and this replacement may be expected to increase sugar yields in the order of thirty-five to forty per cent.

CATEGORY B.

Results are given in Tables XIV, XV, XVI, and XVII.

TABLE XIV.

Select Seedling Trials—Plant Canes.

Estates—Yorkshire and Friendship.

Reaped—Yorkshire—Group I—27th and 28th January, 1942. *Friendship*—Group I—10th and 11th February, 1942.
„ II—29th and 30th „ „ „ II—12th and 13th February, 1942.

Variety	Cane Tons/acre		% Sucrose in Cane		Quotient of Purity		Sugar Tons/acre		No. Rotten Canes per Plot	
	Yorkshire	Friendship	Yorkshire	Friendship	Yorkshire	Friendship	Yorkshire	Friendship	Yorkshire	Friendship
Group I										
B.2935	**27.12**	**33.45**	**13.7**	**14.9**	**82.1**	**86.5**	**3.70**	**5.0**	**18**	**5**
B.3703	—	—	—	—	—	—	—	—	—	—
B.3734	31.37	—	12.5	—	79.7	—	3.91	—	1	—
B.3739	23.83	—	14.4	—	85.0	—	3.43	—	13	—
B.3771	28.26	—	14.3	—	83.4	—	4.04	—	1	—
B.3774	29.19	—	13.6	—	84.1	—	3.98	—	1	—
B.3775	—	30.39	—	15.9	—	89.8	—	4.83	—	12
B.3777	—	—	—	—	—	—	—	—	—	—
B.3791	—	—	—	—	—	—	—	—	—	—
B.37107	—	26.71	—	15.6	—	87.7	—	4.17	—	2
B.37111	27.44	24.98	14.3	15.6	85.4	87.3	3.93	3.90	1	1
B.37161	42.46	35.79	12.4	15.3	83.6	89.6	5.24	5.45	2	3
B.3899	—	29.79	—	14.5	—	85.0	—	4.30	—	3
B.38212	—	29.77	—	13.9	—	86.4	—	4.11	—	3
B.38230	—	—	—	—	—	—	—	—	—	—
B.35245	29.39	27.79	15.4	16.5	88.3	91.1	4.52	4.58	9	4

TABLE XIV—*(Concluded)*

Variety	Cane Tons/acre		% Sucrose in Cane		Quotient of Purity		Sugar Tons/acre		No. Rotten Canes per Plot	
	Yorkshire	Friend-ship	Yorkshire	Friend-ship	Yorkshire	Friend-ship	Yorkshire	Friend-ship	Yorkshire	Friend-ship
Group II										
B.2935	**27.67**	**30.66**	**13.4**	**14.8**	**83.4**	**86.3**	**3.70**	**4.54**	**19**	**8**
B.3439	35.77	—	13.0	—	78.6	—	4.63	—	2	—
B.34104	36.52	30.44	13.3	16.0	84.5	89.8	4.83	4.89	5	4
B.35187	37.87	—	13.6	—	85.2	—	5.14	—	2	—
B.35245	—	27.95	—	16.3	—	90.5	—	4.56	—	6
B.3737	—	—	—	—	—	—	—	—	—	—
B.38154	22.89	—	12.5	—	81.7	—	2.88	—	64	—
B.38155	—	29.78	—	16.2	—	87.1	—	4.83	—	6
B.38178	28.59	23.43	15.1	16.8	88.5	90.3	4.31	3.93	2	4
B.38209	35.20	—	14.5	—	86.2	—	5.11	—	3	—
B.38232	34.62	—	12.8	—	77.9	—	4.45	—	11	—
B.38233	30.17	—	13.2	—	83.9	—	3.97	—	10	—
B.4092	—	31.32	—	15.3	—	88.5	—	4.81	—	16

The following differences may be regarded as significant:—

		Group I	*Group II*
Yorkshire		0.57 tons sugar/acre	0.26 tons sugar/acre
		4.45 tons cane/acre	1.75 tons cane/acre
		Group I	*Group II*
Friendship		0.46 tons sugar/acre	0.19 tons sugar/acre
		3.38 tons cane/acre	3.12 tons cane/acre

TABLE XV.

Select Seedling Trials—1st Ratoons.
Estates—Bourbon and Edgecumbe

Reaped:—Bourbon—6/2/42; Edgecumbe—4/2/42.

Variety	Cane Tons/acre				Z.H.R. Brix				No Rotten Canes/Plot			
	Bourbon		Edgecumbe		Bourbon		Edgecumbe		Bourbon		Edgecumbe	
	Early Reaping	Late Reaping	Early Reaping	Late Reaping	Early Reaping	Late Reaping	Early Reaping	Late Reaping	Early Reaping	Late Reaping	Early Reaping	Late Reaping
B.726 ...	**21.53**	**16.91**	**21.67**	**20.32**	**22.7**	**23.2**	**21.3**	**21.4**	**3**	**1**	**3**	**3**
B.2935	**27.65**	**19.70**	**21.48**	**14.89**	**20.8**	**20.9**	**20.3**	**20.6**	**10**	**9**	**4**	**15**
B.37161 ...	28.85	29.30	33.37	33.42	22.4	21.0	20.9	21.3	15	11	5	6

The following differences may be regarded as significant:—

	Early Reaping	*Late Reaping*
Bourbon	5.88 tons cane/acre	6.72 tons cane/acre
Edgecumbe	5.63 tons cane/acre	2.20 tons cane/acre

TABLE XVI.

Variety Trials—1st Ratoons.
Estates—Bennetts and Newton.
Reaped—Newton 11/2/42.

Variety	Cane Tons/acre			Z.H.R. Brix		
	Bennetts*	Newton†	Mean	Bennetts	Newton	Mean
B.726	**25.41**	**15.28**	**20.34**	—	**23.0**	**23.0**
B.2935	**28.12**	**23.85**	**25.98**	—	**20.9**	**20.9**
B.35187	31.33	15.57	23.45	—	19.8	19.8
B.35245	28.74	16.76	22.75	—	21.8	21.8

* Experiment was harvested by Estate Manager and no plot weights were taken.
† A difference of 2.09 tons/acre cane for Newton may be regarded as significant.

TABLE XVII.

Variety Trials—2nd Ratoons.
Estates—Lears and Lower Greys.
Reaped—Lower Greys 16/2/42. *Lears* 18/2/42.

Variety	Cane Tons/acre			Z.H.R. Brix		
	Lears	Lower Greys	Mean	Lears	Lower Greys	Mean
B.726 ...	**18.33**	—	**18.33**	**23.7**	—	**23.7**
B.2935 ...	**22.12**	**14.99**	**18.55**	**22.0**	**20.9**	**21.4**
B.3127 ...	—	22.66	22.66	—	22.4	22.4
B.3419	12.51	16.40	14.45	22.7	22.3	22.5
B.3439	26.25	30.33	28.29	23.3	22.3	22.8

The following tons per acre cane may be regarded as significant:—

Lower Greys	....	....	3.25
Lears	....	....	2.02

COMMENTS ON RESULTS OF TRIALS IN CATEGORY B.

In Group I, Select Seedling Trials, Plant Canes, B.37161 is definitely superior at all places to all other varieties included in these trials. B.35245 although inferior to B.37161 gave a consistent and fairly good performance at both stations, but it is not up to the standard of B.37161.

In Group II which was reaped later in the crop, B.3439, B.34104 and B.35187 were all superior to the standard variety B.2935. The seedling B.38155 is promising and is to be extensively tested in future trials.

In the Select Seedling Trials, 1st Ratoons, B.37161 was again emphatically superior to both standards.

In the Variety Trials. 1st Ratoons at Newton, the standard B.2935 was the best of the varieties tested while at Bennetts both B.35187 and B.35245 gave higher tonnages than either of the two standards B.2935 and B.726. It is not however, expected that either could compare favourably with B.37161 in this area.

In the Variety Trials, 2nd Ratoons, at Lower Greys and Leans, the variety B.3439 easily outyielded all other varieties tested, in addition to having excellent brix values.

At the present state of knowledge it appears that the present commercial varieties in this Category—B.2935, B.726, B.3127—will be completely replaced by the newer seedling—B.37161 and to a lesser extent—B.3439 and B.34104, and this replacement should result in an increase of sugar output in the order of forty per cent.

CATEGORY C.

Results are given in tables XVIII, XIX and XX.

TABLE XVIII.

Select Seedling Trials—Plant Canes.

Estates—Bulkeley and Carrington.

Variety	Cane Tons/acre		% Sucrose in Cane		Quotient of Purity		Sugar Tons/acre		No. Rotten Canes/Plot	
	Bulkeley	Carrington	Bulkeley	Carrington	Bulkeley	Carrington	Bulkeley	Carrington	Bulkeley	Carrington
Group I										
Reaping Dates	10-11.3.42	17-18.3.42								
B.726	**26.09**	**30.07**	**16.8**	**17.0**	**89.8**	**90.6**	**4.37**	**5.10**	**10**	**3**
B.3734	—	36.69	—	15.4	—	87.7	—	5.62	—	10
B. 3737	28.06	—	**15.3**	—	87.0	—	4.32	—	20	—
B.3739	26.06	—	16.9	—	89.3	—	4.39	—	18	—
B.3771 ...	30.73	—	16.1	—	87.3	—	4.94	—	11	—
B.3774	31.86	—	**16.0**	—	87.8	—	5.10	—	**9**	—
B.3775 ...	—	36.19	—	16.8	—	91.6	—	6.07	—	36
B.3777	—	31.22	—	15.1	—	86.2	—	4.69	—	12
B.3791	31.02	—	14.7	—	87.1	—	4.57	—	14	—
B.37107	29.39	—	**16.3**	—	86.3	—	4.80	—	9	—
B.37111	—	33.87	—	16.9	—	90.1	—	5.73	—	9
B.37161	43.40	43.95	15.4	15.9	88.2	89.2	6.67	6.98	11	11
B.3899	—	31.21	—	14.9	—	85.9	—	4.66	—	22
B.38230	—	36.26	—	15.1	—	86.9	—	5.60	—	11

TABLE XVIII.—*Continued.*

Variety	Cane Tons/acre		% Sucrose in Cane		Quotient of Purity		Sugar Tons/acre		No. Rotton Canes/Plot	
	Bulkeley	Carrington	Bulkeley	Carrington	Bulkeley	Carrington	Bulkeley	Carrington	Bulkeley	Carrington
Group II										
Reaping Dates	12.3.42	19.3.42								
B.726	**28.46**	**26.06**	**16.8**	**17.2**	**90.3**	**90.5**	**4.78**	**4.48**	**9**	**15**
B.34104	39.67	38.18	16.2	17.4	89.3	90.4	6.44	6.65	25	18
B.38154	32.60	—	13.4	—	84.5	—	4.38	—	48	—
B.38155	—	38.31	—	17.1	—	90.0	—	6.54	—	14
B.38178	28.09	—	17.1	—	89.3	—	4.81	—	26	—
B.38209	—	33.00	—	17.1	—	89.6	—	5.64	—	28
B.38212	39.39	—	15.5	—	86.7	—	6.11	—	9	—
B.38232	—	36.14	—	14.9	—	84.1	—	5.38	—	42
B.38233	30.34	—	15.0	—	87.5	—	4.54	—	66	—
B.4019	—	29.74	—	14.1	—	81.3	—	4.21	—	26

The following differences may be regarded as significant:—

Group I.

Bulkeley .... 0.91 tons sugar/acre and 4.54 tons cane/acre
Carrington .... 0.83 „ „ „ „ 4.91 „ „ „

Group II.

Bulkeley .... 0.53 tons sugar/acre and 3.11 tons cane/acre
Carrington .... 0.50 „ „ „ „ 2.90 „ „ „

TABLE XIX.

Select Seedling Trials—1st Ratoons.

Estate—Bulkeley. Reaped 6.3.42.

Variety	Canes Tons/acre		Z.H.R. Brix		No. Rotten Canes Plot	
	Early Reaping	Late Reaping	Early Reaping	Late Reaping	Early Reaping	Late Reaping
B.726	**24.99**	**24.05**	**23.0**	**22.5**	**13**	**19**
B.3127	**26.19**	**25.37**	**22.9**	**24.6**	**5**	**4**
B.37161	40.28	42.09	21.5	21.9	9	2

A difference of 5.64 tons/acre in the Early Group and 4.28 tons/acre in the Late Group may be regarded as significant.

TABLE XX.

Variety Trials—1st Ratoons.

Estate—Constant.

Variety	Cane Tons/acre	Z.H.R. Brix
B.726	**30.40**	**22.8**
B.3127	**33.18**	**21.2**
B. 35187	40.58	20.3
B.35245	31.13	21.8

A difference of 6.26 tons/acre cane may be regarded as significant.

COMMENTS ON RESULTS OF TRIALS IN CATEGORY C.

In the Select Seedling Trials, Plant Canes, the seedling B.37161 was outstanding while in Group II the seedlings B.34104, B.38155 and B.38212 gave very good performances.

In the Select Seedling Trials, 1st Ratoons, the seedling B.37161 as in other trials in Categories A and B in which this seedling appeared, far outyielded the standard and the other varieties tested.

In the Variety Trials, 1st Ratoons, at Constant, the seedling B.35187 was definitely superior to the standard and the other seedlings tested. However, the juice brix value was rather low.

It appears almost certain that B.37161 and probably B.34104 will eventually replace the present commercial varieties—B.726, B.3127 and the newer seedling —B.3439—in this Category and this replacement will probably result in an increased sugar output in the order of fifty per cent.

CATEGORY D.

Results are given in Tables XXI, XXII, XXIII and XXIV.

TABLE XXI

Select Seedling Trials—Plant Canes

Estates—Guinea, Andrews, Westmoreland, Society (Maturity Trial).

Variety	Cane Tons/acre					% Sucrose in Cane (Figures under this head for Society Plantation are Z.H.R. Brix headings)					Quotient of Purity			Sugar Tons/acre			No. Rotten Canes/Plot				
	Guinea	Andrews	Westmoreland	Society		Guinea	Andrews	Westmoreland	Society		Guinea	Andrews	Westmoreland	Guinea	Andrews	Westmoreland	Guinea	Andrews	Westmoreland	Society	
				Early Reaping	Late Reaping				Early Reaping	Late Reaping										Early Reaping	Late Reaping
Group I																					
Reaping Dates	24/3/42	8/4/42	3-4/3/42	13-16/3/42																	
B.H.10(12)	**25.42**	**34.67**	....	....	....	**16.0**	**16.4**	....	....	....	**90.1**	**90.3**	....	4.05	**5.68**	....	**5**	**10**	....	....	.
B.2935	....	....	**38.52**	....	....	....	....	**14.2**	....	....	....	....	**85.2**	....	....	**5.49**	....	....	**7**	..	..
B.34110	29.03	....	....	....	....	14.3	....	....	....	....	87.9	....	....	4.17	....	....	15	....	....	....	....
B.3703....	31.58	35.39	31.68	16.95	12.75	13.8	14.6	14.8	19.7	21.0	88.6	88.3	88.2	4.38	5.14	4.69	12	69	48	70	91
B.3734....	....	....	....	45.35	36.26	....	....	....	21.3	21.4	....	....	....	....	....	....	....	....	....	6	9
B.3771....	24.03	....	....	38.56	38.91	15.7	....	....	22.7	24.8	89.6	....	....	3.77	....	....	5	..	....	5	10
B.3774....	....	....	38.02	40.50	37.00	....	....	16.0	23.7	24.2	....	....	88.8	....	....	6.09	....	....	2	4	12
B.3777....	23.74	35.97	32.79	38.51	35.00	15.9	15.1	14.8	22.1	22.7	89.5	87.0	86.7	2.78	5.41	4.86	5	20	7	4	8
B.3791....	....	37.46	36.37	43.37	35.77	....	14.2	13.9	20.4	21.9	..	87.5	85.8	.	5.32	5.07	....	16	4	10	17
B.37107	27.82	33.32	....	40.52	38.98	15.5	15.3	....	21.3	23.3	88.8	88.3	..	4.32	5.10	....	9	5	....	9	14
B.37111	....	....	....	36.26	37.91	....	....	....	23.0	23.5	....	....	....	....	....	....	....	....	....	2	9
B.37161	....	....	40.64	56.11	57.09	....	....	16.2	21.9	22.6	....	....	90.9	....	....	6.58	....	....	11	5	5
B.3899....	....	....	....	37.93	35.82	....	....	....	19.5	19.8	....	....	....	....	....	....	....	..	....	8	21
B.38212	....	....	....	44.20	45.57	....	....	....	22.7	23.9	....	....	....	....	....	....	....	..	....	5	4
B.38230	....	....	37.76	42.88	43.32	....	....	16.1	23.4	25.3	....	....	90.5	....	....	6.11	....		2	5	11
B.35245	....	....	37.72	....	....	....	....	16.2	....	....	....	....	91.1	....	....	5.62	....	....	4	....	....
B.4092....	....	42.96	....	....	....	....	15.5	....	....	....	....	88.5	....	....	6.66	....	....	46	..	.	....
Group II																					
Reaping Dates	26-27/3/42	10-11/4/42	5-6/3/42																		
B.2935	....	....	**33.16**	....	....	....	....	**14.9**	....	....	....	....	87.0	....	....	**4.94**	....	....	**9**	....	....
B.726	....	**29.29**	....	**38.56**	**34.30**	....	**16.8**	....	**23.3**	**24.0**	....	90.4	....	..	4.88	....	..	22	..	**8**	**10**
B.H.10(12)	**21.77**	**38.98**	....	**37.44**	**37.44**	**15.7**	**16.2**	....	**22.0**	**24.0**	**89.7**	**90.3**	..	3.41	**6.30**	....	**8**	**10**	....	**4**	**12**
B.3013	**25.25**	....	....	**39.49**	**35.38**	**16.1**	....	....	**23.1**	**24.7**	**88.6**	....	....	4.08	....	....	**3**		....	**2**	**5**
B.3419....	....	40.93	31.26	....	....	....	15.7	15.7	....	....	....	88.1	87.1	....	6.43	4.91	....	14	4	....	....
B.3439....	....	....	35.87	....	....	....	....	15.7	....	....	....	....	86.9	....	....	5.63	....	....	3	....	....
B.34104	29.61	41.40	33.46	54.73	53.02	15.8	16.5	15.9	23.7	24.9	89.6	90.6	89.8	4.70	6.84	5.32	21	53	5	8	8
B.35187	26.99	....	34.69	50.13	46.65	14.1	..	15.7	20.1	21.9	87.8	....	90.8	3.81	....	5.42	19	....	4	8	7
B.35245	....	39.04	....	36.80	37.49	....	16.9	....	22.7	23.7	....	91.7	....	....	6.41	....	....	21	....	4	12
B.3737....	....	....	....	26.31	20.34	....	....	....	19.7	21.4	....	....	....	....	....	....	....	..	....	50	52
B.3774....	21.76	34.61	....	....	....	15.3	16.5	....	....	....	89.5	90.4	..	3.32	5.72	....	7	18	..	.	.
B.3791....	25.32	....	....	....	....	13.3	....	....	....	....	86.1	....	....	3.28	....	....	12	.	....	..	
B.37111	23.78	28.60	....	....	....	14.9	16.4	....	....	....	89.4	89.8	..	3.54	4.70	....	15	14	....		..
B.38154	....	....	....	29.60	30.04	....	....	....	21.8	22.4	....	....	....	..	....	....	..	.	..	19	32
B.38155	....	....	37.06	54.43	48.02	....	....	16.3	22.7	23.5	....	....	88.3	....	....	6.03	....	....	6	3	7
B.38209	....	26.80	32.43	24.11	19.36	....	15.8	15.9	20.2	19.9	....	89.5	88.9	....	4.23	5.14	....	130	16	54	79
B.38212	34.34	....	....	....	....	14.6	....	....	....	....	86.1	....	....	5.01	....	....	10	....	....	....	....
B.38232	30.94	....	....	44.15	38.07	15.0	....	....	20.8	21.8	86.4	....	....	4.64	....	....	43	....	....	11	29
B.38233	....	....	29.92	....	....	....	....	15.1	....	....	....	....	89.6	....	....	4.52	....	....	35	....	....

The following differences between mean yields may be regarded as significant:—

		Group I	*Group II*
Westmoreland....		0.65 tons sugar/acre 4.16 tons cane/acre	0.76 tons sugar/acre 4.60 tons cane/acre
Society....	....	4.42 tons cane/acre (for early and late reaping)	
Guinea....	....	Insignificant for both sugar and cane	0.50 tons sugar/acre 3.44 tons cane/acre
Andrews	....	Insignificant for both sugar and cane	1.46 tons sugar/acre 8.95 tons cane/acre

TABLE XXII.

Select Seedling Trials—1st Ratoons

Estates—Welchtown, Easy Hall, Claybury and Pool (Maturity Trial)

Variety.	Cane Tons/acre				Z.H.R. Brix				No. Rotten Canes/Plot			
	Welch-town.	Easy Hall	Clay-bury	Pool.	Welch-town.	Easy Hall	Clay-bury	Pool.	Welch-town.	Easy Hall	Clay-bury	Pool.
Early Group												
Reaping Dates	10/3/42	20/4/42	21/4/42	8/4/42								
B.3013	**25.37**	**26.48**	**37.31**	**31.07**	**22.9**	**24.7**	**23.5**	**23.6**	**4**	**7**	**13**	**3**
B.37161	39.60	37.62	47.53	47.32	22.8	23.0	22.1	22.6	9	26	12	7
B.726	....	....	....	**26.07**	....	....	....	**24.0**	....	....	....	**15**
B.H.10(12)	....	....	....	**31.72**	....	....	....	**23.6**	....	....	....	**8**
Late Group												
Reaping Dates	10/3/42	20/4/42	21/4/42	8/4/42								
B.3013	....	....	....	**31.66**	....	....	....	**23.9**	....	....	....	**3**
B.37161	42.73	38.10	50.88	46.87	22.3	22.9	22.6	22.5	12	39	17	6
B.726	....	....	....	**25.74**	....	....	....	**23.9**	....	....	....	**16**
B.H.10(12)	**28.55**	**31.42**	**35.48**	**30.23**	22.6	**24.1**	**23.8**	**23.6**	**15**	**23**	**39**	**9**

The following differences between means may be considered significant:—

	Cane Tons/acre	
	Group I.	Group II
Welchtown	5.829	5.848
Easy Hall	5.919	2.395
Claybury	4.865	2.758
Pool	2.06	2.06

TABLE XXIII

Select Seedling Trials—3rd Ratoons

Estate—Mount Wilton. Reaped 10.4.42

Variety.	Cane Tons/acre		Z.H.R. Brix		No. Rotten Canes/ Plot.	
	Early Group.	Late Group.	Early Group.	Late Group.	Early Group.	Late Group.
B.726	**25.28**	....	**23.8**	....	**82**	....
B.35187	37.74	36.02	21.8	22.5	44	10
B.35245	39.51	39.08	23.9	24.1	49	15
B.H.10(12)	....	**25.39**	....	**23.8**	....	**12**

A difference of 2.52 tons cane/acre in the Early Group and 2.54 tons cane/acre in the Late Group may be considered significant.

TABLE XXIV

Co-operative Variety Trials—1st Ratoons

Estates—Ashbury, Clifton Hall, Horse Hill, Lancaster, Farmers and Mount Wilton.

Variety.	Cane Tons/acre.				Z.H.R. Brix			
	B.H. 10(12)	**B.3013**	B.35245	B.35187	**B.H. 10(12)**	**B.3013**	B.35245	B.35187
Ashbury	**38.94**	....	....	41.57	**22.4**	....	....	20.8
Clifton Hall	....	**35.34**	39.49	36.46	....	**22.2**	22.6	19.7
Horse Hill....	....	**32.93**	39.17	41.22	....	**21.4**	21.9	20.4
Lancaster	**18.16**	....	....	20.57	**22.7**	....	....	22.1
Farmers	**32.59**	....	....	33.99	**23.2**	....	....	21.5
Mt. Wilton	....	**37.33**	44.94	46.08	....	**23.2**	22.7	21.4

The following differences may be regarded as significant:—

	Cane Tons/acre
Ashbury	1.27
Clifton Hall	2.44
Horse Hill	1.78
Lancaster	1.97
Farmers	1.71
Mt. Wilton	3.14

COMMENTS ON RESULTS OF TRIALS IN CATEGORY D.

In the Select Seedling Trials, Plant Canes, at Guinea, the number of blank holes in most of the plots was so high that accurate interpretation of the results is impossible. At Westmoreland, the seedling B.37161 was again outstanding. The yields of the seedlings B.3439, B.34104, B.3774, B.38155, B.38230 and B.35245 were also encouraging. The seedling B.34104 and to a lesser extent—B.38155 show special promise for this Category.

In the Maturity Trial at Society, the seedlings B.37161, B.34104, B.35187, B.38155 and B.38212 were outstanding. The performances of the seedlings B.34104 and B.38155 were particularly encouraging in view of the high brix value of their juices as well as their high tonnages.

In the Select Seedling Trials, 1st Ratoons, at Claybury, Welchtown, Easy Hall and Pool (Maturity Trial), the variety B.37161 was again vastly superior to the standard varieties—B.726, B.H.10(12) and B.3013.

In the Select Seedling Trials, 3rd Ratoons, the results bear out those previously obtained with these varieties at this station. The varieties B.35187 and more especially B.35245 are definitely superior to the standards B.726 and B.H.10(12).

In the Variety Trials, 1st Ratoons, it can be seen that as a 1st ratoon, B.35245 is definitely superior in cane yields to the standard B.3013 at the three stations at which it was tested, while the brix values of the juices are almost identical.

With regard to B.35187 while at Horse Hill and Mount Wilton it outyielded the standard B.3013, at Ashbury, Lancaster and Farmers, where B.H.10(12) was the standard, its yield was very little better than that of the standard, while its juice was definitely inferior to that of both standards.

To summarise for this Category it is safe to state that B.37161 will be grown commercially on a large scale and that B.38155 and especially B.34104 show a likelihood of becoming commercial varieties. Replacement of existing varieties by these seedlings should lead to an increased sugar output in the order of twenty to thirty per cent.

CATEGORY E.

Results are given in Table XXV.

TABLE XXV.

Select Seedling Trial—Plant Canes.
Estate—Six Men's.

Reaped—Group I—3-4/2/42. Group II—5-6/2/42.

Variety.	Cane Tons/acre.	% Sucrose in Cane	Sugar Tons/acre.	Quotient of Purity	No. Rotten Canes/ Plot
Group I.					
B.2935.	**46.55**	**13.5**	**6.39**	**82.2**	**20**
B.3439	42.97	13.8	5.94	85.4	11
B.3703	40.33	13.8	5.58	83.9	8
B.3737	34.29	12.9	4.41	81.1	22
B.3739	34.60	14.6	5.07	86.2	17
B.3774	35.09	14.5	5.07	85.3	11
B.3791	32.47	12.6	4.10	81.3	10
B.37107	35.19	14.7	5.18	86.6	13
Group II.					
B.2935.	**45.43**	**13.6**	**6.18**	**81.8**	**13**
B.3439	38.96	14.2	5.55	86.5	8
B.34104	38.64	14.8	5.73	87.1	6
B.37161	40.92	14.3	5.86	87.2	9
B.38155	34.67	15.0	5.19	84.8	10
B.38209	38.06	14.8	5.67	86.4	20
B.38233	33.43	14.2	4.75	86.9	19
B.40118	44.93	12.7	5.71	80.4	1

The following differences between means may be considered significant:—

	Cane Tons/acre	*Sugar Tons/acre*
Group I	**5.412**	0.863
Group II	**4.098**	0.769

COMMENTS ON RESULTS OF TRIALS IN CATEGORY E.

In the Select Seedling Trial, Plant Canes, the standard B.2935 outyielded all other varieties tested in both groups. However, it was closely followed in Group I by B.3439, and in Group II by B.37161, B.34104, B.40118, B.38209 and B.3439. All other trials have shown that the seedling B.38209 rots badly and for this reason it has been discarded. The seedling B.40118 has inferior juice qualities and on this account it has also been discarded.

Results from ratoons are awaited in this Category before making any definite decisions, but it is probable that B.34104 and B.3439 will outyield B.2935. In addition, they have superior juice qualities. It is noticeable that B.37161 has, relatively speaking, given its poorest performance in this Category and there are indications that it is not well suited to light soils. Actually, as noted earlier, light soils occur in a very small percentage of the sugar cane area.

One feature of interest in the Select Seedling Plant Cane Trials is that Group I comprised almost exclusively seedlings of purely noble-cane parentage whereas Group II consisted of nobilisations. It is worthy of note that the performances of the latter were much superior to those of the former, and is a further proof of the value of nobilisation work.

F. CONCLUSIONS FROM THE SELECT SEEDLING AND CO-OPERATIVE VARIETY TRIALS

Above everything else these trials have served to prove the remarkable yielding powers of B.37161 in all Categories. With the possible exception of those in Category E., the yields from B.37161 are far ahead of the standards —B.2935, B.726, B.H.10(12) and B.3013.

It has been thought worth recapitulating, in summary form, the performances of this seedling as compared with the standards in categories in all trials in which it has been tested. These figures are given below:—

TABLE XXVI

Ecological Category.	Trial.	Year.	Variety, Yields and Juice Quality.											
			B.37161		B.2935		B.726		B.H.10(12)		B.3013		B.3439	
			Cane Tons/acre	Brix°	Cane Tons/acre	Brix°	Cane Tons/acre	Brix°	Cane Tons/acre	Brix°	Cane Tons/acre	Brix°	Cane Tons/acre	Brix°
A.	Select Seedling Plant Canes....	1941	32.75	18.6	18.68	19.6	....	....	....	....	....	....	....	....
		..	30.23	19.9	17.43	21.4	....	....	....	....	....	....	....	....
		,,	26.93	18.3	19.37	18.9	....	....	....	....	....	....	....	....
		,,	32.21	20.0	24.41	20.3	....	....	....	....	....	....	....	....
	Maturity Plant Canes....	,,	28.21	21.8	23.53	20.0	14.76	22.5	....	....	....	....	....	....
		,,	25.74	22.6	26.52	21.7	15.73	24.1	....	....	..	....	....	....
		,,	29.51	22.8	21.84	21.9	15.73	24.1	....	....	....	....	....	....
	2nd Yr Seedling Plant Canes....	,,												
		1942	48.60	21.0	25.73	20.9	....	....	....	....		....	....	....
		,,	54.34	22.0	16.01	21.0	....	....	....	....	....	....	....	....
	Maturity Plant Canes....	,,	40.04	21.6	33.68	20.5	....	....	....	....	....	....	....	....
		,,	40.32	23.0	29.76	21.9	....	....	....	....	....	....	....	....
	Maturity 1st Ratoons....	..	25.28	23.0	22.36	21.6	15.99	24.1	....	....	..	....	..	....
B.	C.B.S. Thin Cane Plant Canes....	1939												
	Select Seedling Plant Canes....	1941	32.68	21.3	29.02	19.6	21.58	22.2	....	....	....	....	....	....
		,,	30.46	21.7	26.69	20.8	21.30	22.6	....	....	....	....	....	....
		,,	36.40	20.3	26.58	20.2	24.61	21.5	....	....	....	....	....	....
		,,	35.33	21.1	18.04	21.4	19.27	23.0	....	....	....	....	....	....
		1942	42.46	17.6	27.12	18.8	....	....	....	....	....	....	....	....
		,,	35.79	20.9	33.45	19.9	....	....	....	....	....	....	....	....
		,,	40.64	21.6	38.52	19.5	....	....	....	....	....	....	..	....
	Maturity Plant Canes....	,,	56.11	21.9	....	....	38.56	23.3	37.44	22.0	39.49	23.1	....	....
		,,	57.09	22.6	....	....	34.30	24.0	37.44	24.0	35.38	24.7	....	....
	Select Seedling 1st Ratoons....	1942	28.85	22.4	27.65	20.8	21.53	22.7	....	....	....	....	....	....
		,,	29.30	21.0	19.70	20.9	16.91	23.2	....	....	....	....	....	....
		,,	33.37	20.9	21.48	20.3	21.67	21.3	....	....	....	....	....	....
		,,	33.42	21.3	14.89	20.6	20.32	21.4	....	....	....	....	....	....
C	Select Seedling Plant Canes....	1941	41.15	19.7	....	....	23.87	21.6	....	....	....	....	....	....
		,,	38.06	21.1	....	....	22.55	22.7	....	....	....	....	....	....
		1942	43.40	20.5	....	....	26.09	22.5	....	....	....	....	....	....
		,,	43.95	21.4	....	....	30.07	22.8	....	....	....	....	....	....
	Select Seedling 1st Ratoons....	,,	40.28	21.5	....	....	24.99	23.0	....	....	....	....	....	....
		,,	42.09	21.9	....	....	24.05	22.5	....	....	....	....	....	....
D	Select Seedling Plant Canes....	1941	33.37	20.5	....	....	....	....	....	....	24.42	22.0	....	....
		,,	47.54	19.8	....	....	....	....	....	....	35.09	21.0	....	....
		,,	46.41	20.2	....	....	....	....	31.78	21.8	....	....	....	....
		,,	31.12	19.9	....	....	....	....	....	....	22.77	20.5	....	....
		,,	33.24	21.2	....	....	....	....	18.84	20.4	....	....	....	....
	Maturity Plant Canes....	,,	46.41	21.4	....	....	28.93	20.7	34.13	20.1	32.83	22.3	....	....
		,,	46.67	22.1	....	....	26.39	22.2	32.05	20.8	32.57	23.0	....	....
		,,	44.79	21.8	....	....	26.71	22.3	30.36	21.0	31.92	22.4	..	....
	2nd Yr Seedling Plant Canes....	,,	46.41	21.2	....	....	36.66	22.3	33.15	20.4	33.00	21.0	.	..
	Select Seedling 1st Ratoons....	1942	39.60	22.8	....	....	....	....	....	....	25.37	22.9	.	....
		,,	42.73	22.3	....	....	....	....	28.55	22.6	....	....	.	....
		..	37.62	23.0	....	....	....	....	....	....	26.48	24.7		....

TABLE XXVII

Ecological Category.	Trial.	Year.	Variety, Yields and Juice Quality.											
			B.37161		B.2935		B.726		B.H.10(12)		B.3013		B.3439	
			Cane Tons/acre	Brix°	Cane Tons/acre	Brix°	Cane Tons/acre	Brix°	Cane Tons/acre	.. Brix°	Cane Tons/acre	Brix°	Cane Tons/acre	Brix°
D.	Select Seedling 1st Ratoons.... (Cont'd).	1942	38.10	22.9	....	....	....	....	31.42	24.1	....	...	....	
		,,	47.53	22.1	....	....	....	....	....	....	37.31	23.5	...	
		,,	50.88	22.6	....	....	....	....	35.48	23.8	...	....	..	..
	Maturity 1st Ratoons....	,,	46.99	22.5	....	....	26.58	24.2	31.20	23.5	31.26	23.7	....	...
E	Select Seedling Plant Canes....	1942	40.92	20.2	45.43	19.2	....	....	....	....	....	....	38.96	21.1

The tonnage figures speak for themselves. The brix figures are somewhat better than the low rainfall area standard variety—B.2935, although not so good as the standard varieties of the higher rainfall areas—B.726, B.H.10(12) and B.3013. Although the actual data for sucrose percentage in juice are not given here, it may be stated that in this feature, B.37161 compares with the standard varieties as do the brixes noted in the table. The juice purities of B.37161 are very high and compare favourably with those of B.726, B.H.10(12) and B.3013 and are certainly better than those of B.2935.

Preliminary reports from factories indicate that B.37161 mills easily, provides a fine megass of high calorific value and has readily workable juices.

This new seedling trashes hardly as well as the standard and is somewhat susceptible to moth borer attack. It does, however, retain its weight during crop relatively well.

It is being recommended commercially on a large scale in Barbados: from a maximum of ninety-five per cent. of the plantings in Category A to a minimum of thirty per cent. in Category D. It is a very strong ratooning seedling and once it is cropped in accordance with the percentages planted it is anticipated that it will result in an increased sugar output of at least thirty per cent. per acre planted.

The other newer seedling of note is B.34104, whose performances in trials to date are given in the table below:—

TABLE XXVIII.

Ecological Category.	Trial.	Year	Variety, Yields and Juice Quality.											
			B.34104		B.2935		B.726		B.H.10(12)		B.3013		B.3439	
			Cane Tons/acre	Brix°	Cane Tons/acre	Brix°	Cane Tons/acre	Brix°	Cane Tons/acre	Brix°	Cane Tons/acre	Brix°	Cane Tons/acre	Brix°
A	Maturity Plant Canes....	1942	32.56	23.3	33.68	20.5	....	....	....	....	....	....	....	....
		,,	34.08	25.1	29.76	21.9	....	....	....	....	....	....	....	....
	Select Seedling Plant Canes....	,,	34.84	20.8	36.41	19.3	....	....	....	....	....	....	38.90	20.4
B	Select Seedling Plant Canes....	,,	36.52	19.4	27.67	18.3	....	....	....	....	....	....	35.77	19.6
		,,	30.44	22.2	30.66	20.1	....	....	....	....	....	....	....	....
		,,	33.46	22.7	33.16	20.4	....	....	....	....	....	....	35.87	22.2
	Maturity Plant Canes....	,,	54.73	23.7	....	....	38.56	23.3	37.44	22.0	39.49	23.1	....	....
		,,	53.02	24.9	....	....	34.30	24.0	37.44	24.0	35.38	24.7	....	....
C	Select Seedling Plant Canes....	,,	39.67	22.2	....	....	28.47	22.4	....	....	....	....	....	....
		,,	38.18	23.8	....	....	26.06	23.1	....	....	....	....	....	....
D	Select Seedling Plant Canes....	,,	29.61	22.1	....	....	....	....	21.77	22.1	25.25	22.4	....	....
		,,	40.41	22.8	....	....	29.29	22.1	38.98	21.7	....	....	....	....
		,,	33.46	22.7	33.16	20.4	....	....	....	....	....	....	35.87	22.2
		,,	54.73	23.7	....	....	38.56	23.3	37.44	22.0	39.49	23.1	....	....
	Maturity Trial Plant Canes....	,,	53.02	24.9	....	....	34.30	24.0	37.44	24.0	35.38	24.7	....	....
	C.B.S. Thin Cane Plant Canes....	,,	30.96	23.9	....	....	....	....	21.33	22.9	....	....	....	....
E	Select Seedling Plant Canes....	,,	38.64	22.0	45.43	19.2	....	....	....	....	....	....	38.96	21.1

This is a thinner cane type which bunches heavily, grows rapidly, trashes well, gives a very high fall of trash and high cane yields with excellent juice and milling qualities.

So far it has been cut as plant canes only, but indications are that it will prove to be an even stronger ratooning seedling than B.37161. Relatively speaking, it appears to do best in Barbados in Categories B., C., D., and E. and it is anticipated that it will be recommended for large commercial plantings in these places, more especially to provide an early cane as a complement to the main-crop cane—B.37161.

The 1943 results from reaping ratoon trials including this seedling are awaited with interest but results already obtained are so promising that it is recommended for commercial planting for season 1942-44.

The seedling B.3439 continues to serve a very good purpose for commercial plantings, more especially in shallow and stony fields in Categories A., B. and C. where it is giving very good tonnages and, if cut early in crop, good factory qualities.

Commercial plantings of B.35187 and B.35245 have given very good cane yields but complaints have been received from several factories that the calorific values of the megass are low. Accordingly, and in view of the fact that B.37161 and B.34104, in addition probably to giving higher cane yields than these two, have also good milling and good megass properties, the percentages of B.35187 and B.35245 recommended for commercial plantings during 1942-44 have been appreciably reduced and their reductions taken over by B.37161 and B.34104.

In summary, the following listed in order of importance have been recommended for commercial plantings in Barbados during the 1942 planting season:—B.37161, B.34104, B.3439, B.35245 and B.35187.

III. A SHORT NOTE ON SPECIAL INVESTIGATIONS.

GROWTH MEASUREMENTS

During the season 1940-42 growth measurements were made on the following newer seedlings included in the plant cane and 1st ratoon maturity experiments:—B.34104, B.35187, B.35245, B.37161, B.38155, B.38209, B.38233 B.4092. The standard varieties B.H.10(12) and B.3013 (high rainfall area) and B.2935 (low rainfall area) were also measured for purposes of growth comparisons.

MOSAIC DISEASE RESISTANCE TESTS.

During the period under review, 166 seedlings of various parentages were included in mosaic disease resistance tests. Of the seedlings tested 49 became infected with mosaic while 64 seedlings may be regarded as resistant to mosaic in Barbados. The remaining 53 seedlings are still undergoing tests.

Of the 166 stools of the susceptible variety B.2935 which were planted in the tests as checks, 112 stools or 67% became infected with mosaic disease.

IV. IMPORTATION OF NEW BREEDING MATERIAL

A further consignment of 11 seedlings was received during the year under review from Dr. Brandes of the Division of Sugar Plant Investigations, U.S. Department of Agriculture, via the Plant Quarantine Station in Trinidad.

Ten of these seedlings were 1st nobilisations of *Saccharum robustum*, the other being a noble cane derived from the cross Black Fiji x Hind's Special.

All of the seedlings are vigorous, large stalked canes, and are resistant to eye spot, brown spot and brown stripe. The following is a list of the seedlings received together with their parentages:—

Seedling	*Parentage*
C.P.36—144	La Purple x 28 NG. 251.
C.P.36—134	Black Fiji x 28 NG. 251.
C.P.36—158	P.O.J. 2725 x 28 NG. 251.
C.P.36—137	Crystalina x 28 NG. 251.
C.P.36—116	La Purple x 28 NG. 7.
C.P.36—154	Black Fiji x Hind's Special.
C.P.36—133	La Purple x 28 NG. 268.
C.P.36—145	La Purple x 28 NG. 251.
C.P.36—156	P.O.J. 2725 x 28 NG. 251.
C.P.36—127	La Purple x 28 NG. 105.
C.P.31—517	D.74 x 28 NG. 251.

V. DESPATCH OF SEEDLINGS TO THE PLANT QUARANTINE STATION.

During the year under review, 21 seedlings were sent to the Plant Quarantine Station. All of this lot were nobilisations.

With further information obtained from trials in Barbados, it was decided in March 1942 to discard the seedling B.39254, since it was not considered likely that it would become a commercial cane. The following is a list of the seedlings together with their respective parentages:—

Seedling	*Derivation.*
B. 39171	B.3285 x B.H.10(12)
B. 39184	B.3335 x B.2935
B. 39200	B.35206 x B.603
B. 39211	B.3013 x P.O.J. 2878
B. 39220	B.3013 x P.O.J. 2878
B. 39222	B.3013 x P.O.J. 2878
B. 39240	B.3365 x B.2935
B. 39207	B.35206 x B.603
B. 39192	B.35230 x B.603
B. 39199	B.35185 x B.2935
B. 39213	B.3013 x P.O.J. 2878
B. 39215	B.3013 x P.O.J. 2878
B. 39219	B.3013 x P.O.J. 2878
B. 39223	B.3013 x P.O.J. 2878
B. 39229	B.3172 x B.2935
B. 39257	B.3238 x B.35253
B. 39198	B.35185 x B.2935
B. 39157	B.35197 x B.603
B. 39177	B.35218 x S.C.12/4
B. 39237	B.3365 x B.2935
B.. 39254	B.35271 x B.2935

VI STATEMENT OF EXPENDITURE FOR 1941-42.

		£	s.	d.
1.	Personal Emoluments	1,108	18	7
2.	Provident Fund	40	0	0
3.	Seedling Trials	464	19	8
4.	Stationery and Library	41	18	11
5.	Travelling	215	7	9
6.	Incidentals	33	18	3
7.	Capital	124	7	1
	Total	2,029	10	3

APPENDIX I.

SUGAR CANE BREEDING, SEEDLING RAISING AND FIELD NURSERY PLANTING 1941-42—B.44′ SERIES.

Details of Crosses made, their Germinations, Numbers Potted and Numbers Planted in the Field Nursery.

Cross.	Group.	No. Germinations Nov. 1941—Jan. 1942.	No. Potted Jan.–Feb. 1942	No. Planted in Field Nursery.
	S. officinarum			
B.3439 x B.H.10(12)	*Noble*	53	1	....
B.3439 x B.603	„	20	12	12
B.3439 x Ba.6032	„	200	197	190
B.3439 x B.2935	„	122	105	80
B.3439 x B.417	„	929	549	491
		1324	864	773
	S. officinarum x *S. spontaneum*			
P.O.J.2878 x B.H.10(12)	*Noble* x *Glagah*	114	98	96
B.3439 x B.35187	„ x „	112	112	100
B.3439 x B.39282	„ x „	117	109	90
B.3013 x P.O.J.2878	„ x „	39	33	30
B.3439 x B.34161	„ x „	6	3	....
B.34137 x B.417	„ x „	325	281	239
B.3013 x kloet	„ x „	246	246	241
B.3439 x B.39246	*Noble* x *Local*	25	17	17
B.3013 x B.37256	„ x „	85	57	51
B.3439 x B.37254	„ x „	26	23	21
B.3439 x tabongo	„ x *Celebes*	135	102	95
		1230	1081	980
	S. officinarum x *S. robustum*			
B.3439 x 28 N.G.251	1st nobilisation	4183	4183	3387
B.3439 x 32 N.Q.629	2nd „	2	1	....
B.3439 x 32 M.Q.579	„ „	187	186	179
		4372	4370	3566
	S. officinarum x *S. barberi*			
B.3439 x B.40175	*Noble* x *Chunnee*	22	15	15
B.3439 x P.O.J.234	*Noble* x *Chunnee*	383	375	366
		405	390	381

APPENDIX I—*Continued.*

Cross.	Group.	No. of Germinations Nov. 1941—Jan. 1942.	No. Potted Jan.-Feb. 1942	No. Planted in Field Nursery.
	S. spontaneum x *S. sinense*			
B.3353 x B.35275	*Glagah* x *Sinense*	162	159	147
B.3354 x B.35275	,, x ,, ...	36	35	30
B.3354 x B.35276	,, x ,, ...	7	7	0
B.34102 x B.35269	,, x ,, ...	27	9	8
B.3353 x B.35276	,, x ,, ...	85	80	79
		317	290	264
	S. spontaneum x *S. barberi*			
B.35207 x P.O.J.2878	*Chunnee nobilisations* x *Glagah nobilisations*	528	526	521
Co.213 x B.35187	,, ,, ...	....	....	....
B.38203 x B.H.10(12)	,, ,, ...	4	....	....
B.35257 x P.O.J.234....	,, ,, ...	3	....	....
B.3354 x B.38270	,, ,, ...	316	305	290
B.3365 x B.39281	,, ,, ...	22	3	....
B.37174 x B.H.10(12)	,, ,, ...	....	....	....
B.38233 x B.H.10(12)	,, ,, ...	7	....	....
B.38260 x B.H.10(12)	,, ,, ...	19	13	12
B.34102 x P.O.J.234....	,, ,, ...	115	99	84
B.3254 x P.O.J.234....	,, ,, ...	....	....	....
B.3353 x B.37175	,, ,, ...	59	57	50
B.3353 x B.35245	,, ,, ...	58	53	51
B.37161 x B.3337	,, ,, ...	3008	2911	2807
B.3439 x B.37176	,, ,, ...	11	10	....
B.3354 x B.35245	,, ,, ...	98	97	90
B.37161 x B.35187	,, ,, ...	29	23	22
B.37161 x P.O.J.2878	,, ,, ...	232	215	208
B.37266 x B.35245	,, ,, ...	56	54	48
P.807 x B.35187	,, ,, ...	5	5	....
B.3354 x B.37175	,, ,, ...	707	707	666
B.35206 x B.35253	*Local* x *Chunnee*	22	22	21
B.35206 x B.37256	,, x ,, ...	23	23	23
		5322	5123	4893
	S. barberi x *S. sinense*			
B.3365 x B.35275	*Chunnee* x *sinense*	4	2	....
B.37273 x P.O.J.234....	,, x ,,	0	....	....
B.3365 x B.40267	,, x ,,	15	....	....
B.3365 x B.40271	,, x ,,	141	132	126
		160	134	126
	S. barberi x *S. barberi*			
B.35206 x P.O.J.234	*Chunnee* x *Chunnee*	21	17	17

APPENDIX I—*Concluded.*

Cross.		Group.	No. Germinations Nov. 1941—Jan. 1942.	No. Potted Jan.–Feb. 1942	No. Planted in Field Nursery.
		S barberi x *S. sinense* x *S. spontaneum*			
B.3365	x B.35276	*Chunnee* x *sinense* x *Glagah*	26	19	19
B.3365	x B.40266	,, x ,, ...	126	121	120
B.3365	x B.40270	,, x ,, ...	8	....	....
			160	140	139
		Co.281 and its Derivatives			
B.3274	x B.34104	*Glagah* x Co.281			
B.38187	x B.H.10(12)	,, x ,, ...	118	60	60
B.35261	x B.34104	,, x ,, ...	35	25	24
P.O.J.2725	x B.34104	,, x ,, ...	674	674	618
B.3172	x B.34104	,, x ,, ...	612	612	600
B.3354	x B.34104	,, x ,, ...	492	421	414
B.34102	x Co.281	,, x ,, ...	413	401	375
B.3371	x B.34104	,, x ,, ...	47	47	40
B.3353	x B.34104	,, x ,, ...	126	38	30
B.3439	x B.38192	,, x ,, ...	666	644	580
B.35207	x B.34104	Co.281 x *Chunnee*	119	113	100
B.3365	x Co.281	,, x ,, ...	187	186	186
B.35206	x B.34104	,, x ,, ...	68	45	44
B.37161	x B.34104	,, x ,, ...	54	51	50
Co.281	x B.H.10(12)	Co.281 x Noble	70	6	6
B.35271	x B.34104	Co.281 x *sinense*	56	49	44
			57	51	50
			3794	3423	3221
		Co.290 *and its Derivatives*			
M.D.47	x Co.290	Co.290 x *Glagah* nobilisations	4	....	....
B.3393	x Co.290	,, x ,, ...	13	....	....
B.37266	x Co.290	,, x ,, ...	87	82	80
B.3439	x Co.290	Co.290 x *Noble*	673	657	640
B.35206	x Co.290	Co.290 x *Chunnee* nobilisations	24	24	20
B.37226	x Co.290	Co.290 x *Sinense*	3	....	....
B.40272	x Co.290	Co.290 x *Sinense* nobilisations x *Glagah* nobilisations	1189	1176	1134
			1993	1939	1874
		Grand Totals	19098	17771	16234

APPENDIX II.

SUGAR CANE FIRST YEAR SEEDLINGS—B.43' SERIES

List of Crosses and the Numbers of Seedlings Planted in the Field Nursery (April/May, 1941) and the first year Seedling trial (October/November, 1941)

Cross			Group	No. in Field Nursery	No. Planted in First Year Seedling Trial
			S. spontaneum x *S. officinarum*		
B.3371	x B.603	....	*glagah* 5th nobilisation	45	37
B.3439	x B.39250	....	*dacca* 2nd "	32	27
			S. spontaneum x *S. spontaneum*		
B.4102	x B.3337	....	*glagah* nobilis. x *glagah* nobilisation	300	204
B.3353	x B.3337	....	" x "	234	124
B.3354	x B.3337	....	" x "	206	151
B.34102	x B.39262	....	" x *local* nobilisation	60	42
B.34102	x B.39267	....	" x "	110	40
B.3013	x B.38277	....	" x "	50	30
B.3439	x B.38279	....	" x "	50	30
B.3439	x B.38283	....	" x "	50	32
B.35247	x P.O.J.2878		" x *celebes* nobilisation	921	473
B.37227	x "	...	" x "	400	250
B.35197	x "	...	" x "	350	201
B.37227	x B.3337	....	" x "	301	101
B.35247	x "	....	" x "	610	485
B.35197	x B.38280	....	*glagah* x *celebes* x *local*	300	140
"	x B.38281	....	" x " x "	300	151
"	x B.38282	....	" x " x "	300	150
"	x B.38285	....	" x " x "	300	151
			S. spontaneum x *S. barberi*		
Co.213	x P.O.J.2878	...	*glagah* x *chunnee* nobilis.	19	15
B.3365	x P.O.J.2878	...	" x " "	400	253
B.37161	x "	...	" x " "	49	35
B.35206	x "	...	" x " "	310	201
Co.213	x B.3337	....	....	14	10
B.3365	x B.39281	....	....	25	15
B.3353	x P.O.J.234	....	....	86	73
B.3354	x "	....	....	91	72
B.39253	x "	....	....	174	100
B.34102	x "	....	....	328	150
B.3439	x B.37175	....	....	1,020	664
B.37162	x P.O.J.234	....	*celebes* x *chunnee* nobilisation	80	47
B.37227	x "	....	" x " "	68	42
B.3365	x B.39274	....	" x " "	590	344
B.3365	x B.39245	....	local x " "	40	32

APPENDIX II—(*Concluded*)

Cross		Group	No. in Field Nursery	No. Planted in First Year Seedling Trial
		S. spontaneum x *S. sinense*		
B.37226	x P.O.J.2878	S. sinense x glagah nobilisation	132	40
B. 39254	x B.3337	„ x „	16	—
B.34102	x B.35275	„ x „	150	81
B.3353	x B.35272	„ x „	160	—
B.3354	x B.37224	„ x „	42	33
B.35247	x B.35269	„ x celebes nobilisation	410	253
		S. barberi x *S. officinarum*		
B.35206	x B.2935	*chunnee* 4th nobilisation	200	113
		S. barberi x *S. spontaneum* x *S. sinense*		
B.3365	x B.37261	*chunnee* x *glagah* x *S. sinense*	200	114
B.37263	x P.O.J.234	„ x „ x „	17	9
		Co.281 and its derivatives		
B.3274	x B.34107	Co.281 x *glagah* nobilisations	500	272
B.34102	x B.34104	„ x „	395	290
B.3354	x B.34116	„ x „	300	—
B.34117	x P.O.J.2878	„ x „	300	150
Co.281	x B.2935	Co.281 x *S. officinarum*	118	98
B.35197	x Co.281	Co.281 x *celebes* nobilisation	981	588
„	x B.34104	„ x „	998	602
B.3365	x B.34104	C.281 x *chunnee* nobilisation	1,987	1,240
B.38276	x Co.281	Co. 281 x *glagah* nobil. x *S. sinense* nobilisation	510	200
B.34117	x P.O.J.234	Co. 281 x *glagah* nobil. x *chunnee* nobilisation	310	150
		Co.290 and its Derivatives		
B.3439	x Co.290	Co. 290 x *S. officinarum*	77	69
B.35218	x B.603	„ x „	37	28
B.34102	x Co.290	Co.290 x *glagah* nobilisation	122	84
M.D.47	x Co.290	„ x „	404	309
B.3353	x Co.290	„ x „	96	77
B.3354	x Co.290	„ x „	187	151
B.35218	x P.O.J.2878	„ x „	299	202
		Grand Totals	17,161	10,025